BGP Flow Specification – V2?
Time to start

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(updated from June 27, 2016)
4 years to get here

- 2016 WG decided - RFC5575-bis then v2
- 2020 Existing Maturing and Upcoming Work
- Informed Call for presentations for April 8th, 2020
- Flow-specification revision
  - 2016 idea
  - 2020 idea discussion
- Do We need other discussions?
  - Large Community
  - Deprecate AS-Sets
Flow Spec (RFC5575) Review

RFC 5575 summary

- NLRI
  - For SAFI 133: IPv4 (AFI=1), IPv6 (AFI=2), L2VPN AFI=25
  - For SAFI 134: IPv4 (AFI=1), IPv6 (AFI=2), L2VPN (AFI=25)
- Validation
  - Originator of flow spec = originator of best-match unicast route for destination embedded in NLRI,
  - No more specific unicast routes, when compared with Flow destination prefix, that have been received from different neighbor AS

Problems with RFC5575

- No user-based ordering for filters or actions
- Security could be
  - Added to by BGPSEC or ROA
  - Could be lessened within a single AS [draft-ietf-idr-flowspec-oid]
Flow Specification Policy

- **ECA = Event – Condition - Action**
  - Flow-specification event = “packet reception”,
  - Condition – match filters in NLRI
  - Action – in Extended communities

**FS Policy Rule List**
- FS Rule
  - Match Filters in BGP NLRI SAFI 133, 1334
  - Actions in Transitive BGP Extended Communities
    - Modify
    - Forward
RFC5575-bis Fixes

- flowspec-nlri – encoding replaces opaque-key
  - Defines + uses new comparison bits (section 4.2.2.1)
  - Match = All of component bits
- Traffic filtering extended communities
  - All RFC5575 become Transitive extended communities
  - Traffic-rate-packets added
- Security section updated
- Draft-ietf-idr-flow-spec-v6
  - In WG last call – no comments
  - IESG requires for RFC5575bis to complete
Mature Specifications

- Draft-ietf-idr-bgp-flowspec-oid-11
  - Within AS allows centralized flow-spec filtering
  - Needed by operator
  - List Discussion: Problems putting this in RFC5575bis (?)
- draft-ietf-idr-flowspec-nv03-08 – adds tunnel filters
- draft-ietf-idr-flowspec-l2vpn-13 – adds L2vpn filters
- draft-ietf-idr-flowspec-interface-05.txt – interface scope
  - RT + group identifier for identifying flow-spec filter application
- draft-ietf-idr-flowspec-path-redirect-10.txt
  - Action: indirect based on type, opaque-ID and table
  - Possible types: Local (0), MPLS-SR (3, 4), tunnel-id (5)
Less Mature and Pending

Adopted
- draft-ietf-idr-mpls-flowspec-match
- draft-ietf-idr-mpls-flowspec-label

Adoption Request
- draft-li-idr-flowspec-srv6

In the pipeline
- draft-wang-idr-flowspec-dip-origin-as-filter-02
- draft-liu-idr-flowspec-ifit-04.txt

Using Community Atoms
- draft-ietf-idr-rpd
Flow-Spec next generation (FS-ng)

Discussion

- What do operators need now for flow-specification?
  Categories: Deployed (needing RFC), Implemented, Needed

- RFC5575bis
  - Should there be any RFC5575bis add on NLRI?
  - Problems if add Add

- What problems need to be solved?
  - NLRI flexible coding, Large communities (?)
  - NLRI filter expansion – tunnels, l2vpn, mpls,
  - RT refinement (RT+interface group, …)
  - New Forwarding actions (path-redirect, SR-redirect),
  - Security
Dependencies???

IDR Work

- Large communities?
- Deprecate AS-Sets / Confed-Sets

Grow Work?

- Any drafts?
2016 ideas on flow-specification v2
June 27, 2016
New filter match with order

| +------------------------+ |
| | length (2 octets) | |
| +------------------------+ |
| | sub-TLVs (variable) | |
| +------------------------+ |
| | order (2 octets) | |
| +------------------------+ |
| | type (2 octets) | |
| +------------------------+ |
| | length (2 octets) | |
| +------------------------+ |
| | value (variable) | |
| +------------------------+ |
| | [multiples of 2 octets] | |
| +------------------------+ |

Figure 16 - NRLI revision
New Action atom for BGP Wide Communities

| +---------------------------------+ |
| | order (2 octets) | |
| +---------------------------------+ |
| | Action type (2 octets) | |
| +---------------------------------+ |
| | Action length (2 octets) | |
| +---------------------------------+ |
| | Action Values (variable) | |
| | (multiples of 2 octets) | |
| +---------------------------------+ |

Wide Community Atom

figure 17
BGP-FS Atom added to
Wide Communities container (type 1) or
BGP Flow Specification container (type 2) (see below)

BGP-FS Container  type 2
+-----------------------------------+
| Source AS Number  (4 octets) |
+-----------------------------------+
| list of atoms (variable) |
+-----------------------------------+